



Biomass Facilities

Office of Land Quality

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Introduction:

Anaerobic digestion (digestion in the absence of free oxygen) is the use of biomass and acceptable feedstock for energy production or recovery of other reusable byproducts as approved by Indiana Department of Environmental Management (IDEM), such as animal bedding. For the purposes of this fact sheet, the term biomass facility includes biomass anaerobic digestion facilities and biomass gasification facilities. This fact sheet provides information on what approval is needed for a biomass facility and how to obtain it.

Construction or expansion of a biomass facility requires IDEM approval. The type of approval required depends on where the biomass facility is located and the type of waste accepted. If the facility is located at a Confined Feeding Operation (CFO), an approval is required under 327 IAC 19 from IDEM's Office of Land Quality.

If a facility receives biomass and segregated appropriate feedstock for processing as defined in 329 IAC 11.5-2-3, a registration under 329 IAC 11.5 is required. If a facility receives other solid waste, such as municipal solid waste (MSW) not listed in 329 IAC 11.5, or the facility does not plan to accept biomass as defined in 329 IAC 11.5-2-3, a solid waste processing facility permit under 329 IAC 11 is required. Key definitions are available in [329 IAC 11.5-2](#). Contact information for the solid waste permit manager in your area can be found at www.idem.IN.gov/landquality/2459.htm.

Key terms and definitions:

- A **biomass anaerobic digestion facility** is a facility that anaerobically decomposes biomass to simple organic compounds and biogas in a closed and sealed chamber and includes a methane recovery system.
- A **biomass gasification facility** is a facility that uses heat and chemicals in a low or oxygen free environment to convert biomass to a synthetic gas.
- **Biomass** is material derived from living organisms that grow back or produce more of the material and is used as a source of energy. Biomass can include:
 1. Agricultural crops
 2. Agricultural wastes and residues
 3. Wood and wood byproducts, including:
 - Wood residue
 - Forest thinning
 - Mill residue wood
 4. Animal wastes and byproducts, including manure
 5. Aquatic plants
 6. Algae
 7. Byproducts of processing agricultural crops, including:
 - Stems
 - Stover
 - Straw
 - Other grain and crop residues
- **Appropriate feedstock** is a segregated solid waste that can be processed with biomass at a biomass facility to produce useful materials or energy. Appropriate feedstock must be segregated from the general waste stream, with no additional de-packaging required and should not include non-biodegradable waste.

Appropriate feedstock would not include any packaging, plastic or microplastic.

Appropriate Feedstock can include:

1. Food waste or food services waste
2. Cooking oil and grease
3. Livestock operation residues
4. Wood pallets
5. Industrial waste, such as:
 - Paper pulp
 - Sewage sludge
 - Off-spec or unused animal feed from non-industrial waste sources dried distiller grain
6. Food waste from food manufacturing

State forms and submission process

- **CFO/CAFO** – Biomass Digester/Gasification Facility Registration form (State Form #55309) is required to be included *with* a Confined Feeding Operation (CFO) Permit Application Packet if located at a CFO.
- **Standalone biomass facility**, not at CFO – biomass anaerobic digester/gasification facility registration application form (State Form #55309) is required.
- **Solid waste processing facility** – If the facility is receiving waste that requires substantial further processing, including physical, thermal, or chemical treatment, including depackaging, prior to entering the biomass facility, a solid waste processing facility permit is required (State Form #50392).
- **Land application** – If the biomass facility receives appropriate feedstock or solid waste and produces material to be land applied, the permittee also needs to apply for a land application permit under 327 IAC 6.1, whether it is located at a CFO. Application forms (State Form #53514, #53517 and/or #53584) for land application permits should be submitted to the IDEM Solid Waste Permits Section.

Other permits and registration approvals may be required under IDEM's air and water permit programs. For example, diesel-fired generators as small as 74 hp or natural gas-fired generators as small as 0.5 MMBtu/hr can require an air permit. If you believe that a biomass facility may require an air permit, you can contact IDEM's Compliance and Technical Assistance Program (CTAP) at 800-988-7901 or ctap@idem.IN.gov. IDEM'S Office of Air Quality is also available to answer air permitting questions related to biomass facilities at 317-232-8603 or 800-451-6027.

The Indiana Code (IC) and Indiana Administrative Code (IAC) references in this document can be viewed on the Indiana General Assembly website at iga.IN.gov. IC references are under the "Laws" dropdown menu. IAC references are under the "Publications" dropdown menu.

Learn more about anaerobic digestion and biomass

- U.S. Environmental Protection Agency: www.epa.gov/agstar/how-does-anaerobic-digestion-work
- U.S. Department of Agriculture: www.climatehubs.usda.gov/commodity/biomass
- U.S. Energy Information Administration: www.eia.gov/energyexplained/biomass/landfill-gas-and-biogas.php

What permit/approval is needed?

The table on page 3 details which permit approval is needed from IDEM.

	Biomass Registration Required? (329 IAC 11.5)	Solid Waste Processing Permit Required? (329 IAC 11)	CFO Approval Required? (327 IAC 19)
CFO with Biomass Facility (Biomass only) See footnote 1	No See footnote 1	No (IC 13-20-10.5-2)	Yes
CFO with Biomass Facility (Biomass & Appropriate Feedstock) See footnotes 1 and 3	No See footnote 1	No (IC 13-20-10.5-3(a))	Yes
CFO with Biomass Facility (Biomass & Solid Waste other than Appropriate Feedstock) See footnotes 1 and 3	No	Yes if waste other than Appropriate Feedstock per Biomass Rule	Yes See footnote 2
Biomass Facility (Biomass only, not at CFO) See footnote 5	Yes (329 IAC 11.5)	No (IC 13-20-10.5-2, 329 IAC 11.5)	N/A
Biomass Facility (Biomass & Appropriate Feedstock, not at CFO) See footnotes 3 and 5	Yes (329 IAC 11.5)	No (IC 13-20-10.5-3(a), 329 IAC 11.5-1-1(b))	N/A
Biomass Facility (Biomass & Solid Waste other than Appropriate Feedstock, not at CFO) See footnotes 3 and 4	No SW Processing Permit required (329 IAC 11.5)	Yes (IC 13-20-10.5-3(a), 329 IAC 11.5-1-1(a))	N/A

*** Please note, to operate a biomass facility, IDEM approval is needed independently of other external agencies that might require approval, such as the Indiana Office of State Chemist (IOSC).**

Footnote

1. A biomass facility on the premises of a permitted CFO must be approved through incorporating the requirements of 329 IAC 11.5 into their CFO approval instead of receiving a separate biomass registration. The CFO should submit a completed biomass registration form with its application for a new CFO approval or modification to the CFO Permits Section. The CFO biomass facility can then be approved through the CFO/CAFO approval.
2. Since the biomass facility remains part of the CFO's manure operations, it still needs to be included in the CFO's overall approval. The permittee must include a completed biomass registration form with its application for a new CFO or CFO modification.
3. A land application permit or a marketing and distribution permit (327 IAC 6.1) will be required if the facility is land applying, composting or distributing appropriate feedstock or other solid wastes, both alone and when mixed with biomass.
4. The department may determine that a biomass anaerobic digestion facility or a biomass gasification facility in which other solid waste is received is subject to regulation as a solid waste processing facility under 329 IAC 11.
5. A biomass facility not associated with a CFO must do the following:
 - a) Take material derived from living organisms that grow back or produce more of the material and is used as a source of energy (biomass), and optionally accept appropriate feedstock that requires no substantial further processing.
 - b) Create a usable product or energy. If a biomass facility chooses to accept appropriate feedstock, then it is recommended that the facility receives 30% minimum by weight of material as biomass.